Human Resource and Training Needs Assessment and Strategies

Saskatchewan Aviation Sector Partnership

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Final Report

THE Trimension™ GROUP

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Executive Summary

Introduction

In August 1999, members of the Saskatchewan aviation industry, including business, training providers, and government bodies, conducted a study of the human resource and training needs of the industry. The goal of the study was to provide information to aid the industry in undertaking human resource and training planning. As well, through the sector partnership, the industry wished to:

- Develop effective partnerships between the aviation industry, training providers and other stakeholders;
- Establish a relationship between the needs of the Saskatchewan aviation industry and the national organizations to address the occupational standards and training standards;
- Develop a learning culture within the aviation industry which fosters continuous learning and information sharing;
- Enable the industry to be in a position to continue to provide leadership using the results of the study.

Methodology

In order to meet these objectives, members of industry, training providers and government formed a sector partnership steering committee. The committee met regularly to guide the research process and the direction of the partnership. Trimension Group was contracted to conduct the necessary research, including a literature review, an industry survey, and a survey of Approved Maintenance Organizations (AMOs), and compile training information and a training database. The steering committee discussed the key findings of the research to identify priority needs.

Key Findings & Industry Profile

At the beginning of the sector partnership, the steering committee's intent was to capture information on the broad range of occupations. It quickly became apparent, however, that the most pressing human resource and training needs were in the pilot and Aircraft Maintenance Engineer (AME) occupations. Pilots and AMEs are the largest occupations in the industry and face the greatest challenges and demands. As a result pilot and AME sub-committees were formed to identify and address the specific needs of each of these occupations.

Industry analysts at the international, national and provincial levels are predicting tremendous growth in aviation. In Saskatchewan alone, the industry is predicting a 20% increase in the number of pilots and a 17% increase in the number of flying instructors in the next 5 years. Industry estimates put the required number of new AMEs over the next two years at 61. Compounding these predictions of provincial growth are the aging pilot and AME populations and the demands international growth will place on the Saskatchewan workforce.

The Saskatchewan aviation industry is in the unique position of being a dynamic and growing industry, yet faced with an absence of training facilities for pilots and AMEs. Transport Canada

regulations governing pilot training are in the process of substantial change; groundschool hour requirements are increasing from 40 to 400 and this will effectively eliminate commercial pilot training in the province unless action is taken. Currently, AME training is only available out of province. Saskatchewan residents have to travel to Alberta, British Colombia, Manitoba or elsewhere in the country to receive AME training.

Offering commercial pilot training in accordance with Transport Canada's revised regulations and AME training in the province has distinct advantages. It provides an opportunity to the people of the province to pursue rewarding career paths in an exciting industry. It will help mitigate the out-migration of Saskatchewan people who leave the province to pursue aviation training. It will provide businesses with well-trained pilots and AMEs who wish to remain in their home province. For those individuals wishing to pursue the rewards of larger centres, their training will allow them to pursue those opportunities. Canada's highly regarded reputation in flight training, coupled with Saskatchewan's ideal conditions for flying, will attract out of province and out of country students, adding value to the local and provincial economies. Training providers will be able to offer new programs and continue to offer quality training, resulting in employment opportunities for instructors and other staff. In short, AME and commercial pilot training based in Saskatchewan will meet the needs of the Saskatchewan industry and benefit business, training providers and students.

Recommendations

The Saskatchewan Aviation Sector Partnership recommends that AME and commercial pilot training be offered in Saskatchewan and that industry and SIAST partner to develop and deliver this training. The Partnership also recommends that, through the continuation of the Partnership, issues of recruitment and retention among the general public, existing staff, Northerners, Aboriginal peoples, and youth be explored and addressed. The results of the study and the work of the Partnership should be communicated to the industry and general public via industry newsletters and media outlets.

Next Steps

The following initiatives are planned for the Aviation Sector Partnership.

- In partnership with SIAST, private training providers, and industry, develop an experimental pilot training program;
- In partnership with SIAST, government, and industry, address AME entry level training through the development of AME training efforts;
- The Aviation Sector Partnership Steering Committee continue discussions with the stakeholders and training providers regarding training for the industry and recruitment and retention issues;
- Communicate results of report with steering committee and general public.

Project Status Report
As of May 15, 2000

SAC/SIAST Pilot Groundschool Training

- We are pleased to announce that SIAST Kelsey Campus will begin delivery of pilot groundschool training this fall.
- Details are currently being finalized. Class schedules, instructors, final curriculum development, application process, media releases and notification to flying schools are underway.
- Marketing of the course will begin in short order.
- Industry input and participation in this process is critical to the program's success. Please call the SAC for more information.

AME Training

- A small working group of industry and SIAST representatives continue to explore options for AME training in Saskatchewan.
- Work will continue and interested individuals are invited to provide their input.

Youth

- Steering Committee members expressed interest in and concern about recruiting youth into aviation. The final report recommends action in this area.
- SAC has committed to participate in the Career Expo in March 2001.
- The Career Expo will require a lot of industry involvement, both in preparation and at the event. If you are interested in participating, call the SAC office.

Communications

- The steering committee, industry, and interested members of the public can keep up to date on the Partnership's activities through the SAC newsletter.
- Media releases will be considered as occasions warrant.

Continuing the Sector Partnership

- As you well know, this is a busy time in the aviation industry. At a more opportune time in the future, the Aviation Sector Partnership will reconvene.

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Introduction

In August 1999, members of the Saskatchewan aviation industry, including business, training providers, and government bodies, embarked on a study of the human resource and training needs of the industry. The goal of the study was to provide information to aide the industry in undertaking human resource and training planning. As well, through the sector partnership, the industry wished to:

- Develop effective partnerships between the aviation industry, training providers and other stakeholders;
- Establish a relationship between the needs of the Saskatchewan aviation industry and the national organizations to address the occupational standards and training standards;
- Develop a learning culture within the aviation industry which fosters continuous learning and information sharing;
- Enable the industry to be in a position to continue to provide leadership using the results of the study.[1]

Methodology

In order to meet these objectives, members of industry, training providers and government formed a sector partnership steering committee. The committee met regularly to guide the research process and the direction of the partnership. Trimension Group was contracted to conduct the necessary research, including a literature review, an industry survey, and a survey of Approved Maintenance Organizations, and to compile training information and a training database.[2] Twenty companies were surveyed in the first survey. Members of the Aircraft Maintenance Engineer (AME) sub group felt that a second survey was warranted in order to focus solely on Approved Maintenance Organizations (AMOs). In this second survey, 12 AMOs employing 107 licensed and apprentice AMEs were surveyed. AMO survey results show a greater need for AMEs than results in the first survey. This is likely due in part to rapid changes in the industry resulting from out of province companies advertising for AMEs in the province and to survey methods. In the first survey, respondents were asked to project their need for AMEs over 5 years. In the second survey, they were asked to estimate their need immediately and in the next 2 years. Respondents may have found it easier to project their need over a shorter time period.

This report is the result of the efforts of the steering committee, pilot and AME sub-committees and Trimension Group. While the steering committee acted as a sounding board for ideas and recommendations, the details and rationale for each occupation originated with the sub-committees.

[1] See original concept proposal.
[2] This information can be found in separate documents and is available from the steering committee members or the Saskatchewan Aviation Council.

Key Findings

At the beginning of the sector partnership, the steering committee's intent was to capture information on the broad range of occupations.[3] It quickly became apparent, however, that the most pressing human resource and training needs were in the pilot and AME occupations. Pilots and AMEs are the largest occupations in the industry and face the greatest challenges and demands. As a result, pilot and AME sub-committees were formed to identify and address the specific needs of each of these occupations.

- There are over 330 pilots and flying instructors employed by 17 air carriers and flying schools in the province;
- The industry is predicting a 20% increase in the number of pilots and a 17% increase in the number of flying instructors in the next 5 years;
- 92% of AMOs said that Saskatchewan is presently experiencing a shortage of licensed and apprentice AMEs and CAMC certified technicians.

[3] For information about other occupations please see the survey report.

The Need for Pilots and Pilot Training

GROWTH AND DEMAND

There are over 330 pilots and flying instructors employed by 17 air carriers and flying schools in the province. The industry is predicting a 20% increase in the number of pilots and a 17% increase in the number of flying instructors the industry will need in the next 5 years. This means an additional 65 pilot/flying instructor positions will be created over the 5 years. Currently, estimates put the number of commercial pilots trained in Saskatchewan at fewer than 50 per year. Add to this the fact that 13% are over the age of 45 and approaching retirement and that there is a average turnover rate of 17% and it becomes apparent that the industry is facing a critical demand for pilots.

Aviation is a growing industry, offering good job prospects to aspiring pilots. Entry level pilots and flying instructors in the province can expect to earn, on average, $26,295. An experienced pilot/flying instructor has much stronger earning power and draws an average salary of $47,387. While the aviation industry requires people willing to work flexible work hours with periods away from home, salary is one way of compensating for the time demands.

While much of the flying done by Saskatchewan companies is provincial, the aviation industry competes on a global basis for skilled personnel. On average, Aviation industry companies generated 86% of their gross revenue within Saskatchewan. Of those surveyed, nine (9) companies (45%) generated, on average, 22% of their revenue out of province and five (5) companies (25%) indicated 10%, on average, of their revenue was generated in international markets. While the planes may fly mainly in Saskatchewan, the pilots who fly them can get jobs anywhere in the world. Pilots who start with small operators or as flying instructors can quickly move up to larger carriers and fly out of Toronto, Montreal, Vancouver or any major North American city. Canadian training is well respected around the world and pilots can find work in almost any market; and the markets are growing.

The International Civil Aviation Organization is forecasting 5% growth in scheduled passenger traffic world-wide in the year 2000 and 6% in 2001. This means passengers will be logging 2,875 billion passenger-kilometres in 2000 and 3,038 in 2001.[4] By 2018 the world's fleet is expected to more than double, from 12,600 aircraft in 1998 to 28,400 in 2018.[5] All of these planes will need pilots and Saskatchewan will surely feel the impact.

While predictions of growth are putting pressure on the industry to train more pilots for the future, the current shortage was the impetus for examining the long-term problem. The shortage of trained and experienced pilots and flying instructors is the biggest problem employers face when recruiting. Saskatchewan employers are looking for pilots with a strong work ethic and

[4] "World Airline Passenger traffic Growth to Pick Up Through 2001," International Civil Aviation Organization news release, 9/1999.
[5] "Global Competitiveness Concerns Could Boost Airport Expansion," Aviation Week & Space Technology, October 25, 1999, p. 88.

proper training; the two biggest barriers to people finding employment as pilots are a lack of experience and the cost of training. In short, air carriers are not finding the people they need. These problems are magnified in the north, where most flying is done in Saskatchewan, because people can be resistant to relocating.

At the root of these problems are a number of factors. While aviation has a romantic air about it, the industry feels there is a lack of knowledge among youth about aviation careers. Entry level pilots do not always understand that flying can be seasonal work with erratic hours and that they will likely have to take the less desirable jobs to get into the industry. They must be willing to relocate, often to northern regions or another part of the country. Flying can also put strains on family life as it requires a great commitment and often long periods away from home.

Added to the shortage of trained and experienced pilots and flying instructors is turnover. While pilot turnover in the industry is relatively low, 17% in the survey sample, half of the employers considered it a problem. Typically, pilots voluntarily leave their jobs and move on to larger carriers. Seasonal work creates turnover as pilots are laid off. While some level of turnover can be healthy in an organization, bringing in new ideas and fresh energy, there is a thin line between healthy turnover and problem turnover. Turnover costs money in lost flying time and retraining new staff. If it is severe enough, it can mean a company looses its experience base. These problems can be magnified in the north, as pilots who have relocated may be more likely to move after they have gained some experience.

Like much of the country, Saskatchewan aviation is experiencing a shortage of trained and experienced pilots and flying instructors and is facing a significant future demand. In Saskatchewan, these problems are compounded by the upcoming changes in Transport Canada's rules and regulations governing pilot training. Current regulations require pilots to undergo 40 hours of ground school training. The new regulations will require 400 ground school hours. For now, schools in Saskatchewan can train to meet current requirements, however they do not have the capacity to expand to meet future requirements.

TRAINING

Saskatchewan aviation is facing a number of challenges in the provincial capacity to train for current and future needs. Transport Canada regulations are changing to keep pace with international standards. Current pilot training cannot meet future requirements. Large carriers are looking for pilots with college diplomas, while Saskatchewan has no such training. The career progression of commercial pilots in Saskatchewan is being impeded by the lack of diploma level training.

Transport Canada has announced that in June 2000, 400 hours of ground school will be required for commercial pilot training. This is only one change being made by the federal body charged with regulating and monitoring Canada's aviation industry. While Transport Canada's duties have changed significantly over the last several years, changing from an operating and regulatory department to a policy and regulatory body, it issues stringent rules and regulations to which all facets of the industry must conform.

Transport Canada is making significant changes in the rules and regulations governing commercial pilot training. An integrated program is being implemented to ensure pilots have all the skills and knowledge they will need in the real world of commercial flying and not just enough to pass a flight test. An integrated program will mean that ground school and flying time will be integrated and delivered over a minimum of 5 phases. These phases take a future pilot through a progression of flight training. Operations manuals will be used in the delivery of training and must be developed according to Transport Canada's guidelines and must receive Transport Canada's approval. Transport Canada will also require training manuals and lesson plans for all dual, solo and simulator lessons and ground school lessons. Transport Canada also regulates testing, educational standards for entry, recommended length of course, medical standards and instructor qualifications.

In June of 2000, Transport Canada's Integrated Commercial Pilot License program will be in effect and will become the industry standard and the only choice of career oriented students. The rigorous flight training required and the 400-hour ground school requirement approximate a college-level diploma program.

With the introduction of the integrated commercial training program, Canadian schools will once again be able to offer flight training that is recognized by the new European standards (JARS). The program being developed for offer in Saskatchewan will certainly be competitive at the international level. The ability to attract foreign students adds to the feasibility of any program offered in Saskatchewan.

Saskatchewan has eight flight training schools delivering the current 40 ground school hours and the flying time needed to become trained as a commercial pilot. The schools train fewer than 50 commercial pilots per year. The reason there are so few commercial pilots trained is because several of the schools are very small and therefore only capable of training few, if any commercial pilots. Some of these schools do not have the capacity to deliver the future

Transport Canada requirements. Flight training units are facing increased demand from industry in terms of the number of pilots needed, while at the same time dealing with large increases to the required ground school time required by Transport Canada.

Saskatchewan is the only province with no college level training facility at a time when a diploma is a pilot's ticket to flying for a large carrier. In other provinces, flight training units are partnering with colleges to deliver diploma level pilot training. Coastal Pacific Aviation and the University College of the Fraser Valley joined forces 16 years ago and have recently added an aviation degree program. Saskatchewan residents must leave the province to take college level training, which drains the industry of the motivated individuals wishing to become pilots and effects the provincial economy as taxpayers and consumers move away.

Tuition rates for college level programs typically are between $26,000 to over $32,000 for a two year program. Selkirk College in British Colombia charges $28,000 for two years. These fees do not include the cost of instructors or use of simulators. The tuition at Mount Royal in Calgary is $30,000 for two years. At Coastal Pacific in British Colombia tuition for the flying portion of training is $32,000 plus $400 per semester paid to the University College of the Fraser Valley (UCFV) for the academic portion. All of these programs are in some way subsidized by the government. Colleges receive core funding which covers a large portion of the cost of delivery. In partnership based programs such as Coastal Pacific/UCFV, the academic portion of training is cored funded. While these are samples of tuition rates from across the country, the actual cost of delivery is unknown. SIAST typically charges 12% of the cost of delivery as tuition in their core funded programs. Extension courses are cost recovery.

Air carriers invest heavily in training new pilots. Typically companies are looking for a good work ethic, common sense, people and communications skills as well as some level of aviation experience in an entry-level pilot. There are a variety of skills employers said entry-level pilots are lacking, including math, communication, business skills and aviation experience. Some of these skills, such as communications and customer service can be learned with experience, but many can be taught in a longer course. The need for sufficient initial training is particularly important considering the difficulties employers face in training on the job. Employers have difficulties in scheduling training, they do not have much time, and the cost is significant. In order to deliver this training effectively, industry needs a combination of external and in-house training.

Current need for pilots is not being met and the changes in Transport Canada regulations will mean current flight schools cannot deliver required commercial flight training on their own. There are other changes occurring in the industry that will put further strain on future training. Developments in global positioning systems (GPS), communication and computer technology will require training that prepares pilots to use emerging technology. Niche market operators will require pilots with specialized knowledge in the appropriate equipment. Ski and float operators and aerial sprayers see a need for specialized skills in their pilots. While training cannot be customized to every segment of the industry, it is important to provide pilots a solid foundation in new technologies.

Air carriers have recognized the need for new commercial pilot training and are willing to contribute resources to that training. Companies indicated they would release their employees to participate in the training, provide transportation to move students to training sites, provide pre-employment and on the job training, accommodation, training aids and equipment.

RATIONALE: WHY DELIVER COMMERCIAL PILOT TRAINING IN SASKATCHEWAN?

Aviation is a vital and growing sector of the Saskatchewan economy. Currently comprising about 10% of the provincial economy, Saskatchewan aviation is expected to grow as interprovincial and international markets expand. A significant portion of Saskatchewan flying occurs in the North where some areas are only accessible or are more easily accessible by air. Northern industries such as tourism and mining rely on air carriers.

While aviation services northern industries, at the same time it is a logical career option for northern people. Making pilot training and careers accessible to northern people would help the industry overcome a significant barrier to recruitment and retention: relocating to remote areas. At the same time it would provide northern people with excellent job opportunities. As well, only 3% of the provinces pilots are of Aboriginal ancestry, 1% less than the provincial employed labour force and a situation the industry wants to address. People of Aboriginal ancestry represent an untapped labour pool, and in northern regions especially, the aviation industry can benefit from training and recruiting from Aboriginal communities. The communities also benefit from the availability of jobs. In order to ensure candidates are prepared for the rigours of pilot training and the industry and to ensure success for Aboriginal peoples in this field, pre-employment preparation and support must be integrated into the training.

For people wishing to advance on the career path of a pilot, a diploma is an important asset. Large carriers prefer to recruit and promote pilots with diplomas, and even university degrees are becoming more common. Saskatchewan residents looking for this type of advantage must train outside of the province. For example, Mount Royal College in Calgary has 20 Saskatchewan residents enrolled in their 1999 program. That is 22% of their total enrolment in their 2-year program. When students leave for two years, the province loses an active member of the economy. As well, Saskatchewan pilots trained out of province may be recruited by local companies and not return to Saskatchewan. Residents with a diploma who wish to return to Saskatchewan may face additional challenges in finding a job here. Because training in another province will teach aviation from the perspective of that province's aviation industry, Saskatchewan companies may have to invest additional training in someone trained elsewhere. This requires additional investment from the carrier and poses a barrier to someone looking for work. Any initiative that can be taken to keep Saskatchewan residents here and supply them with training and jobs is a healthy initiative for the Saskatchewan economy.

Saskatchewan has the best flying space in the country and possibly the world. Military pilots have been trained in Saskatchewan since World War II and Bombardier is doing so currently. Saskatchewan has excellent flying weather, good navigational facilities and air traffic services and light traffic. This combination of factors provides the ultimate conditions for flight training.

Not only will individuals trained as pilots in Saskatchewan benefit, but the regional and provincial economies will as well. The establishment of a two year integrated pilot program will generate economic growth in a number of areas. Jobs will be created for flying and academic instructors and administration staff, contributing to consumer spending in the local economy and the local and provincial tax base. Students, arriving from across Saskatchewan and out of province, will similarly contribute to the economy. Saskatchewan companies will be able to expand their businesses because of the availability of locally trained personnel, resulting in further spin off jobs created by business growth. Out of province companies will begin to look to Saskatchewan as an attractive business location and the province could see an influx of aviation companies, again contributing to the tax base and job creation.

STRATEGIES

Pilot Training Delivery

The nature of pilot training in Saskatchewan is changing on a number of fronts and the province's aviation industry must act to meet the changing needs. Transport Canada's new regulations could effectively eliminate commercial pilot training in the province if the industry does not make significant changes to training delivery. As the new regulations come into effect in June of 2000, establishing a new training program in a timely manner is critical. Examples of this can be found across the country as the flight training industry seeks to address Transport Canada changes.

The Aviation Sector Partnership has explored several training options. Training options across the country have been explored in order to assess the best option for Saskatchewan. As time is of the essence in this matter, the Saskatchewan Aviation Sector Partnership is looking for the most time efficient option and is anxious to begin a program in the fall of 2000.

1. **Saskatchewan Aviation Council (SAC) training**:
   - The SAC would develop and approve an Integrated Commercial Pilot ground school, which would be taught by any participating Saskatchewan flight training school; or,
   - SAC would pursue accreditation as a private vocational school and SAC instructors would teach ground school. Flight training would be done by private flying schools.

Industry has demonstrated considerable support for an industry driven training effort. The Saskatchewan Aviation Council is a reputable industry organization that would co-ordinate the effort. There is a pilot training infrastructure in the province that could be coordinated to deliver training according to a province wide model that would meet Transport Canada's new

regulations. Because it would be industry-based private training, various funding options must be examined to assess/off-set cost.

2. **SIAST certificate/diploma course**:
   - SIAST would teach and issue a diploma or certificate for a SAC developed course.
   - Initiating a SIAST approved diploma or certificate course would take a long period of time and would not meet industry's needs soon enough.

A SIAST program would be immediately recognized across the country and the SAC would not have to pursue private vocational school status. However, as pilot training would not likely replace existing programs in SIAST's business planning process, it would have to be delivered on a cost recovery basis. This would result in high tuition fees that would act as a barrier to enrolment.

3. **Brokerage arrangement of existing program**:
   - SAC would broker a college level program from another institution, such as Embry-Riddle University in the United States, or Selkirk College in British Colombia.
   - Delivery agent would be SIAST and private flight training units, coordinated by SAC.

Brokering a training program would provide the province with recognized training quickly. However, Saskatchewan industry wants training specific to Saskatchewan. Brokering training from such institutions as Embry-Riddle could also be cost-prohibitive and the financial benefits directly generated by the school would not stay in Saskatchewan.

4. **SAC/SIAST partnership**:
   - Joint program with aviation subjects offered by SAC approved private training providers. Academic related subjects such as math, physics, communications, cultural awareness, survival, electronics, computers, etc offered by SIAST campuses toward joint SAC/SIAST certificate.

Working with SIAST would provide ready access to teachers of academic components of the training. Such a partnership would also confer immediate recognition on the program. As well, program funding such as QuickSkills, available only to public institutions, could be accessible. QuickSkills funding would allow the Aviation Sector Partnership the financing and speed to establish the program in a timely manner. Another advantage to this option is the opportunity for students to access their Registered Education Savings Plans. This plan would ease some of the industry's need for well-trained personnel and would help the smaller flight schools manage a 400 hour program.

One of the difficulties with this option would be long term sustainability. QuickSkills funding is project based and would not sustain the program in the long term. It appears unlikely that pilot ground school training will become a core funded program, and would have to operate in the long term as a cost-recovery program. This could be cost-prohibitive to students, therefore costs

must be examined closely and an assessment made concerning the most cost efficient delivery method.

5. **Status quo**
   - Continue on present course and make no changes to pilot training delivery in the province.

If no provincially coordinated pilot training is established to deal with Transport Canada changes, no commercial pilot training will be conducted in Saskatchewan. Existing flight training units will be faced with difficult financial situations and could quite possibly go out of business.

Proposed Commercial Pilot Curriculum

The Aviation Sector Partnership has researched and developed a pilot training program that would meet the requirements of Transport Canada. Program content will be developed by industry and the SAC in accordance to Transport Canada's ***Study and Reference Guides***.

Time Analysis and Credit Assignments

Note: Sections 1-9 below are found in the *Study and Reference Guide*.

Section 1 CARs: 60 hrs
Section 2 Navigation and Radio Aids: 50 hrs
Section 3 Meteorology: 75 hrs
Section 4 Airframes, Engines and Systems: 60 hrs
Section 5 Theory of Flight
Physics – basic high school review: 30 hrs; Aerodynamics: 25 hrs.
Section 6 Flight Instruments: 40 hrs.
Section 7 Flight Operations: 50 hrs.
Section 8 Human Factors: 30 hrs.
Section 9 IFR Ground school: 100 hrs

Other Essential Modules
A. Bush Operations: 8 hrs.
B. In-field Aircraft Maintenance: 15 hrs.
C. Dangerous Goods: 8 hrs.
D. First Aid: 12 hrs.
E. Summer and Winter Survival: 16 hrs.
F. Computer Use – Nav Canada/Transport Canada (CAR's)/Maintenance (AD's): 20 hrs.
G. Communications: Customer service, job search skills: 30 hrs.
H. Electricity, math, physics: 40 hrs.
I. Industry Indoctrination: 15 hrs.
J. A/C Type training: 60 hrs.

Total Ground school Hours: 744 @ 15 hrs/academic credit = 49.6 credits

Total Flight Hours: 200 @ 10 hr/credit = 20 credits

Total Credits: 69.6

The Need for AMEs and AME Training

GROWTH AND DEMAND

In the second survey, which was focused specifically on the AMOs, there were 107 licensed and apprentice AMEs and other licensed or unlicensed technicians employed by 12 companies. These 12 AMOs represent 35% of the AMOs in Saskatchewan and are the largest in the province. Care must be taken in extrapolating their predicted growth to the entire industry. These industry members predicted they would need an additional 45 licensed and apprentice AMEs over the next 1 to 2 years and identified an immediate need for 16 licensed and apprentice AMEs.[6] As well, 12% of AMEs are over the age of 45, a demographic that will impact the industry over the next 10 years as these AMEs approach retirement.[7]

In the AMO survey, 92% said that Saskatchewan is presently experiencing a shortage of licensed and apprentice AMEs and Canadian Aviation Maintenance Council (CAMC) certified technicians. Of the respondents, 50% said the shortage is severe. One respondent estimated a shortfall of 150 – 200 technical people in the industry. Added to this present demand is the prediction by 92% of AMOs that there will be a shortage in 5 years.

The International Civil Aviation Organization is forecasting a 5% growth in scheduled passenger traffic world-wide in the year 2000 and 6% in 2001. This means that passengers will be logging 2,875 billion passenger-kilometers in 2000 and 3,038 in 2001.[8] By 2018 the world's aircraft fleet is expected to more than double, from 12,600 aircraft in 1998 to 28,400 in 2018.[9] All of these aircraft will require maintenance and repairs. In addition, much of the world's present fleet of aircraft are aging, thus requiring an increasing amount of maintenance.

While there is a demand in Saskatchewan for apprentice and licensed AMEs, a national and international demand is making relocation a viable option for Saskatchewan employees. The demand for AMEs is resulting in major advertising campaigns to fill a variety of positions. Transport Canada is undertaking a campaign to fill over 40 vacant Civil Aviation Safety Inspector positions. Aviation and career websites list hundreds of aviation technical jobs all over Canada and the United States. Some estimates put US requirements at 10,000-12,000 aviation technicians in order to keep pace with attrition and fill new positions. Aviation companies in the United Kingdom are placing job advertisements on aviation specific career sites. The Federal Aviation Administration is carrying out a campaign to attract the best in the industry. Government agencies pay well and offer positions with fewer time demands than in private industry. Pensions, holidays and other benefits are also attractive features of government

[6] AMO survey. Please note: the AMO survey primarily forms the basis for this section.
[7] Carrier & AMO survey
[8] "World Airline Passenger traffic Growth to Pick Up Through 2001," International Civil Aviation Organization news release, 9/1999.
[9] "Global Competitiveness Concerns Could Boost Airport Expansion," Aviation Week & Space Technology, October 25, 1999, p. 88.

employment. In recent attempts by larger AMOs to lure experienced Saskatchewan-based AMEs to other Canadian locations/companies, starting salaries of $25/hr., an $11,000 signing bonus, and fully paid moves have been offered.

This study demonstrates a shortage of AMEs compounded by predictions of AME job growth, based on current business size and practices. A significant amount of AMO work is sent out of province. Individual companies export between $50 thousand and $1 million worth of business each. Estimates put the amount of their business leaving the province at $4.35 million. This figure indicates only those amounts provided by the 30% AMO sample, and does not reflect the total dollars being spent outside of the province by the entire AMO population (34). These dollar values represent a significant amount of business that could be done in the province if trained personnel were available. Typically engine and instrument overhaul and hydraulics are sent out of province. AMOs have said that they would expand into avionics, all aspects of maintenance and engine overhaul if trained personnel were available.

In order to grow or expand, AMOs would need trade or licensing areas in the following:

- Licensed AME's – (6)
- Sheet metal/structural repair (4)
- AME's helicopter trainees
- Sheet metal instructors.
- Avionics personnel, instrument technician, engine overhaul technician, propeller overhaul technician, structural technician, painters and upholsters.
- 2 technicians, AME apprentice
- Avionics
- S33 rated – structures sheet metal
- E – Electronics licenses
- Turbine training endorsement
- Component overhaul

Present turnover among AMEs/Apprentices is relatively low, 7% in the first survey sample, but replacing these employees with specialized training in an industry which is expanding is becoming quite difficult. If this 7% rate was applied to the 240 AMEs (holding valid licenses) with Saskatchewan addresses, it would equate to 17 persons. If half of these individuals were simply moving to a different aviation employer in Saskatchewan, the net turnover requiring replacement personnel would be 8.5. While some are changing professions and leaving the industry altogether, some leave to pursue a variety of options, including moving out of province, moving to a larger company, or moving to a less remote location. The primary reason for turnover seems to result from AMEs moving out of the province.

REGULATORY PERSPECTIVE

The Canadian aviation industry is federally regulated by the Department of Transportation (Transport Canada). To the observers unfamiliar with this industry, it may appear that the regulatory requirements are quite onerous, however the consequences of failure are very high. Through the concerted efforts of the industry and the regulators, Canada has an aviation safety record that is among the best in the world. The stringent training and licensing requirements for Aircraft Maintenance Engineers (AMEs) are an integral part of this safety equation. As a result, all institutions wishing to provide federally accredited AME training must meet the applicable regulatory requirements to become an Approved Training Organization.

TRAINING

There is currently no AME training in Saskatchewan. Saskatchewan residents aspiring to be AMEs must leave the province to attend any number of training schools throughout the country. Typically, AME related training can take 1 to 3 years, depending on the program, and tuition generally costs about $2,000 per year. The Southern Alberta Institute of Technology estimates that 20% (13) of their present students in AME programs are from Saskatchewan. Stevenson Aviation Technical Training in Manitoba is the only program in the country that offers 4 year apprentice style training, whereby students attend Stevenson 9 weeks of the year and are employed in the industry the rest of the year. 10 of the 130 AME apprentices currently attending Stevenson's are from Saskatchewan.

There are basically two models of training AMEs. The most prevalent model, in use at most schools, is the one to three year full program model. Students enroll full-time at a school, usually for 9 consecutive months. In the summertime, they have the opportunity to work in the industry or elsewhere and save for the school year. The majority of the full-time enrollment programs have an 18 month enrollment term, with a corresponding 18 month accreditation towards the student's required apprenticeship time. The other training delivery method is the apprenticeship model. This is being done in Manitoba by Stevenson Aviation Technical Training. Students take 9 weeks of the year away from their jobs to attend training at Stevenson's. They are almost completely funded by Employment Insurance, and are only recently required to pay a fee of $25 per week. Stevenson's is also developing a campus based, full term program ready for delivery in September 2000. Stevenson's has found that typically large carriers prefer the full term training model. They hire from the colleges and train them through their apprenticeship. Smaller carriers prefer the apprenticeship model as it makes new entrants into the industry more quickly available.

While various institutions across the country have well-established AME programs, the Canadian Aviation Maintenance Council (CAMC) in more recent years has developed competency-based, nationally recognized curricula for 13 aviation maintenance trades. These 13 trades/specialties encompass aviation related trades, which are not individually licensed by Transport Canada, although they are recognized by that federal department. CAMC is a national body established as a forum for long-term human resources planning and training in the industry. In the AMO

survey 67% said they would hire a CAMC certified technician either in addition to and/or in lieu of an AME.

Because there is no training in the province, AMOs must turn to out-of-province sources for trained personnel. 75% of respondents said they would hire most or all of their AMEs from outside the province. This is presently out of necessity, as there is a limited in-province source of AMEs and apprentices. Their preference is for people who have been trained through a Transport Canada approved training course. While employers are looking for some level of knowledge and experience among entry-level AMEs, they also require problem solving and learning skills and a good attitude and work ethic. Entry-level apprentices typically lack industry knowledge and experience, problem solving skills, and the ability to apply mechanical knowledge. Communication skills and the ability to work with others may be skills that are lacking, but they are also ones that can be learned on the job.

While employers are looking for certain technical and employability skills, there is also a preference for hiring Saskatchewan people. 84% agreed that people who have been in the province for a number of years would be more likely to stay in Saskatchewan. AMOs also support the establishment of a training school in the province. 83% said they would support a program that would bring students to a knowledge and competency level that would better prepare them for employment in aviation maintenance. AMOs are willing to provide release time for their employees to participate in training, donate training aides and equipment, and pre-employment on-the-job training.

RATIONALE: WHY DELIVER AME TRAINING IN SASKATCHEWAN

The literature review undertaken in this study documents the growth in the aviation industry. Saskatchewan aviation is anticipating the impact of global growth, not just in business but also in the demand for trained personnel. AMEs are critical in safety and business operations. Employers are looking for employees with a proper attitude toward safety; someone who understands the role they play in maintaining safe aircraft. AMEs are also critical in keeping aircraft mobile and profitable. A fleet with too many grounded aircraft will soon see the negative impact on revenues. AMOs are starting to feel the impact of an AME shortage in the province. They believe that people from Saskatchewan trained in the province will remain here, helping to stem the out-migration of the province's young people. In addition, the industry is more than willing to contribute to the establishment of training in Saskatchewan, through the donation of training aids.

Aviation provides excellent job opportunities for Saskatchewan people. Apprentice AMEs in the province can expect to earn on average $26,461. An experienced AME has much stronger earning power and draws an average salary of $48,321. These average salary figures are calculated from the salary range as uncovered in the survey of $15,000 for entry level, apprentice AMEs, to $60,000 for experienced AMEs. Other evidence indicates that AME apprentices in their fourth year typically earn $35,000 and AMEs in senior management earn as much as $75,000. While the aviation industry requires people willing to work flexible hours, salary is one

way of compensating for the time demands. And, unlike pilots, AMEs are typically not required to spend a large amount of time away from home.

Northerners can also benefit from AME training in the province, as much of the flying in Saskatchewan is done in the North. Making AME training and careers accessible to northern people would help the industry overcome a significant barrier to recruitment and retention: relocating to remote areas. As well, only 3% of the province's AMEs are of Aboriginal ancestry, 1% less than the provincial employed labour force and a situation the industry wants to address. People of Aboriginal ancestry represent an untapped labour pool, and in northern regions especially, the aviation industry can benefit from training and recruiting from Aboriginal communities. The communities also benefit from the availability of jobs. As with pilot training, pre-employment preparation and support must be integrated into the training.

AMOs are beginning to feel the effects of an AME shortage in the province. Without action, this shortage will only become more acute. It will take two to three years to establish a training program and long term solution to the problem. At least a further 1 to 2 years are required before graduates from any Saskatchewan based training program are ready to work. The industry must act quickly before the shortage becomes critical. While a Saskatchewan AME program could be turning out graduates in 3 to 5 years, (a period which could be shortened through a concerted effort by all stakeholders), there are remedies that can be taken in the interim in partnership with out-of-province organizations to mitigate the coming crisis.

ESTIMATES OF ANNUAL NEED

The survey indicated a projected growth of 61 AMEs over the next two years, with 16 required immediately and the remaining 45 over the next one to two years. Of the 61 AMEs required, 30 are licensed/certified and 31 are apprentices. Of the 30 licensed/certified AMEs, 7 are required immediately and 23 within the next one to two years. Of the 31 apprentice AMEs required, 9 are needed immediately and 22 within the next one to two years.

Respondents were asked to account for attrition in their projections. Averaged over the next 2 years, industry requires 30.5 AMEs per year. The turnover rate is 7%. If we estimate that half of the turnover (3.5%) stayed in the province, but simply went to a different AMO, the result is the net turnover related "new fill" requirement. To take into account the turnover of staff who move around within the industry, estimated at 3.5%, this must be subtracted from the predicted need. Therefore, relying strictly on survey results, approximately 29 AMEs will be required over each of the next two years.

Transport Canada advises that there are presently 240 AMEs with valid licenses who have Saskatchewan mailing addresses. This number does not include Apprentice AMEs. This figure is subject to some fluctuation/inaccuracies, as some AMEs will retain their provincial mailing addresses if they are working out-of-country. However, it is probably balanced by the AMEs currently working in the province with out-of-province addresses. A conservative estimate of the additional AME growth, over and above the survey results, can be calculated using the whole

licensed AME population, minus the ones accounted for in the survey. If the provincial "new fill" rate is approximately 3.5% per year, as demonstrated above, then an additional 6 AMEs will be required every year if there was no growth in the industry, just to maintain the status quo.

In total, conservative estimates would indicate that over the next two years 35 AMEs will be required each year.

STRATEGIES

Short term: Delivery of CAMC courses

Many of the AMOs surveyed indicated they would be willing to hire individuals trained through CAMC's courses. CAMC has their own curriculum and directly provides accreditation to the educational institution. Appropriate CAMC courses could be purchased by SIAST and implemented. While this alone will not solve the province's AME/Apprentice shortage, it will at least mitigate the shortage in other trade areas. The suggested CAMC courses are Non-Destructive Testing, Aviation Welding, and Aviation Electrical/Electronics.

Long term: Development of a SIAST AME program

SIAST should immediately evaluate and cost out the establishment of an in-province AME training program, introduce it into their business planning cycle and, pending approval, begin development of an AME program. Industry would participate in the development of the course and its planning and implementation. The industry representatives on the working group have indicated that a full-time enrollment style program, similar to the one offered at SAIT, is preferable to an apprenticeship style program. Many of the required training aids and facilities could possibly be obtained from the Department of Defense, who are winding-down their aircraft maintenance activities at CFB Moose Jaw, following the establishment of the NATO Flight Training in Canada (NFTC) centre at that location. Under NFTC, aircraft and aircraft maintenance services are to be provided by Bombardier Aerospace. The opportunity to solicit material support from DND is, in all likelihood, time-limited. As a result, SIAST, through the appropriate Saskatchewan government department, should solicit support from them without delay.

Once SIAST becomes an Approved Training Organization (ATO), there will be numerous other training opportunities which could be undertaken to broaden the training services offered, such as providing recurrent training, human factors training, aircraft type conversion training, military to civilian "top up" training, etc. In addition, as witnessed by the huge success of the NFTC program in Moose Jaw, there is also a great potential for the ATO to attract out-of-province and out-of-country students.

CONCLUSION

The results of this assessment have clearly demonstrated that there is a demonstrated need for an Approved Training Organization in the province, and that SIAST is the most logical choice to become one. As stated previously, there are currently at least 23 Saskatchewan residents receiving their AME training in other provinces. It is quite probable that if approved training was available within Saskatchewan, most of these 23 students would have taken their training in our province. In addition, our most conservative calculations yield a yearly requirement for 35 trained personnel, which should easily justify the establishment of a Saskatchewan-based ATO.

Saskatchewan aviation businesses are spending millions of dollars every year to have aircraft related inspections and component overhauls completed out-of-province. The obvious reason for this is that the services they require are not available in the province. Saskatchewan-based AMOs do not have the personnel they presently require, let alone expand. 27% of the survey respondents stated that they would expand their businesses by an average of 82%, if the required personnel were available. Until such time as the personnel shortage is addressed, the business potential of Saskatchewan's aviation industry will continue to be stunted, and the millions of dollars spent by that industry outside of the province every year will continue to increase.

Recommendations

The following recommendations deal with the specific situations of the pilots and AMEs as well as provide general goals for the industry not specific to one occupation.

PILOTS

The Aviation Sector Partnership recommends that the Saskatchewan Aviation Council pursue a partnership with SIAST to deliver an experimental pilot training program funded through the QuickSkills program. Such an initiative would enable pilot training that meets new Transport Canada regulations to be delivered in Saskatchewan in a timely fashion.

Strategies

- Request that SIAST assess the costs of delivering such a program in partnership with industry and aviation training providers;
- Request that QuickSkills funding be considered as a funding option in order to run the program in a timely fashion;
- Develop the course outline and content for such a program;
- Continue to partner with training providers and industry in establishment and delivery of the program.

AIRCRAFT MAINTENANCE ENGINEERS

The Aviation Sector Partnership recommends that the Partnership investigate the delivery of Canadian Aviation Maintenance Council courses.

Strategies

- Request that SIAST explore purchasing and delivering appropriate CAMC courses. These courses include Non-Destructive Testing, Aviation Welding, and Aviation Electrical/Electronics.

The Aviation Sector Partnership recommends that SIAST explore and pursue the development of an AME training program.

Strategies

- Request SIAST to evaluate and cost out the establishment of an in-province AME training program and introduce it into their business planning cycle;
- Request that, pending approval, SIAST begin development of an AME program;
- Ensure industry's participation in the development of the course and its planning and implementation;
- Discuss with the Department of Defense use of CFB Moose Jaw training aids and facilities;
- Assess in-kind contributions to training program including industry's commitment to provide training aides;
- Develop and implement a full-time enrollment style program to train AMEs for Saskatchewan industry.

RECRUITMENT

The Saskatchewan Aviation Sector Partnership recommends that the Partnership explore and address issues of recruitment among the general public, Northerners, Aboriginal peoples, and youth.

Strategies

- Explore **Aboriginal** recruitment strategies with Saskatchewan Indian Institute of Technology and Metis Employment & Training;
- Explore issues of **Northern** recruitment with training providers such as Northlands College;
- Promote career opportunities in aviation to **youth** through the Saskatoon Industry Education Council and Youth Internship Program;
- Request that the Saskatchewan Aviation Council participate in the Careers 2000 expo coordinated by the Saskatoon Industry Education Council;
- Work with training providers to promote Saskatchewan training and career opportunities.

RETENTION

The Saskatchewan Aviation Sector Partnership recommends that the Partnership explore and address issues of retention among the existing staff, Northerners, Aboriginal peoples, and youth.

Strategies

- With the assistance of Aboriginal organizations and training providers, explore initiatives to ensure **Aboriginal** retention in the workplace. For example, job readiness component to

training programs and cross cultural education in the workplace;
- Through the sector partnership encourage industry cooperation and discussion on issues of retention.

SECTOR PARTNERSHIP SUSTAINABILITY

The Saskatchewan Aviation Sector Partnership recommends the continuation of the partnership to work towards implementing the recommendations and furthering its goals.

Strategies

- Outline contributions by members of the steering committee to sustain the sector partnership. For example, SAC to coordinate meetings, companies to donate meeting space, members to take on responsibilities arising from meetings;
- Continue the pilot and AME sub-committees to oversee the recommendations regarding those occupations;
- Continue to meet and work on recommendations regarding recruitment and retention.

COMMUNICATION

The Saskatchewan Aviation Sector Partnership recommends that the results of the study and the work of the partnership be communicated to industry and the public to raise awareness of the partnership and communicate the training and career opportunities in the industry.

Strategies

- Share outcomes of sector partnership with industry through the SAC newsletter or information bulletin;
- Issue a media release at the public release of the report.

Next Steps

The following initiatives are planned for the Aviation Sector Partnership.

- In partnership with SIAST, private training providers, and industry, develop an experimental pilot training program;
- In partnership with SIAST, government, and industry, address AME entry level training through the development of AME training efforts;
- The Aviation Sector Partnership Steering Committee continue discussions with the stakeholders and training providers regarding training for the industry and recruitment and retention issues;
- Communicate results of report with steering committee and general public.